

10/529333

FIG. 1A

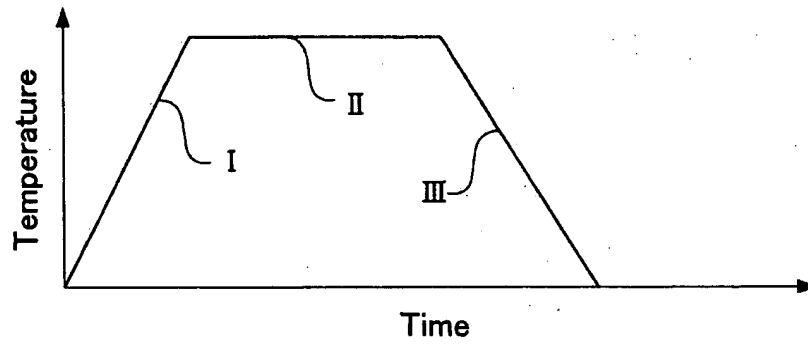


FIG. 1B

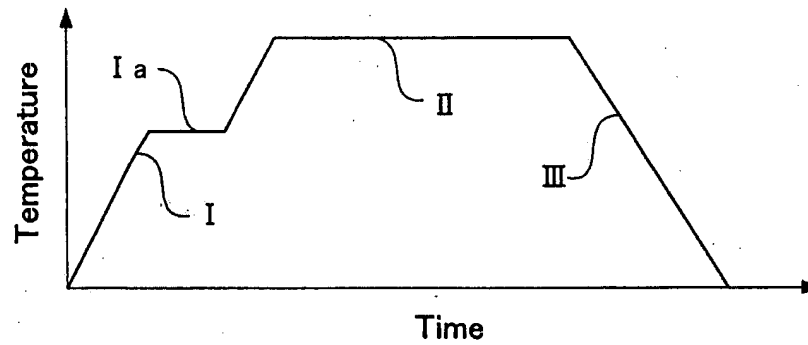


FIG. 1C

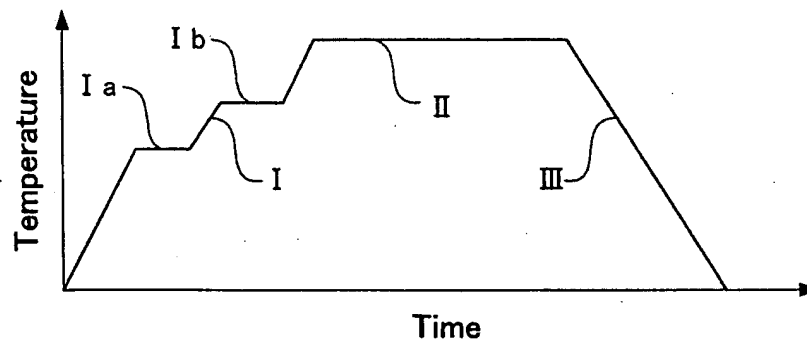


FIG. 2A

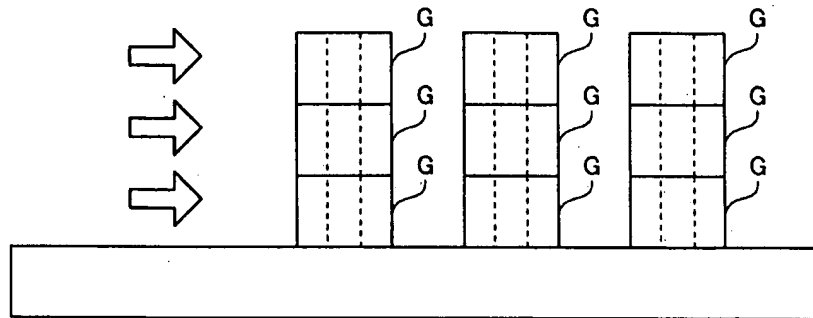


FIG. 2B

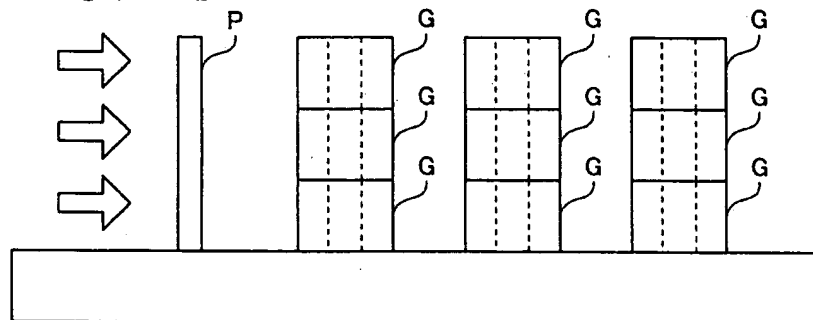
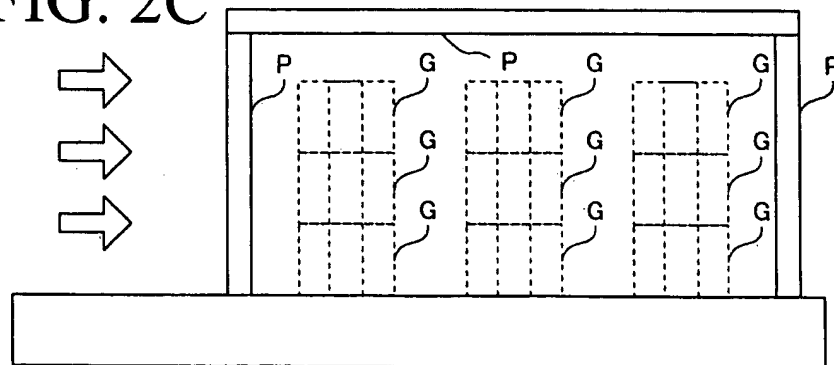


FIG. 2C



10/529333

FIG. 3

PO ₂ at 1350°C (%)	ρ ($\Omega \cdot m$)	P _c v (kW/m ³)	P _e v (kW/m ³)	Change rate of P _c v (%)	δ Value
1	0.798	948	297	21.0	0.0052
0.2	0.339	1073	472	15.2	0.0034
0.05	0.078	2493	2079	5.0	0.0030
0.02	0.039	3765	3347	2.3	0.0022
0.005	0.034	7799	4947	-0.9	0.0020
0.002	0.039	5131	4222	1.3	0.0029

10/529333

FIG. 4A

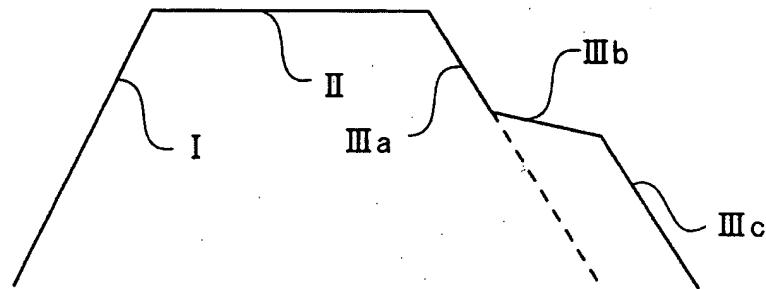


FIG. 4B

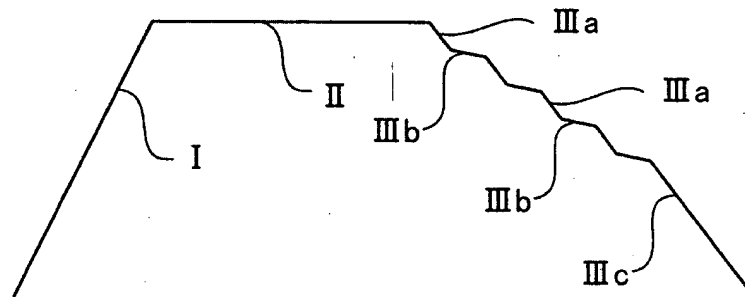
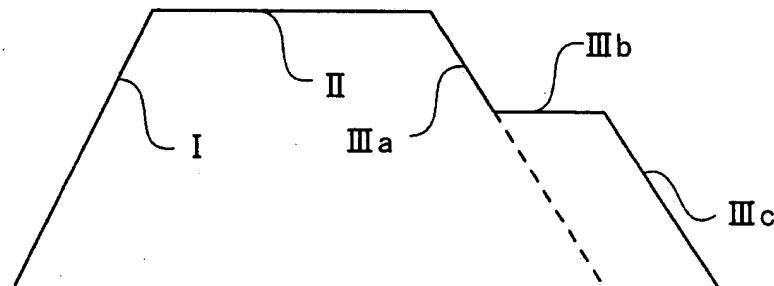


FIG. 4C



10/529333

FIG. 5

PO ₂ at 1350°C	Temperature in slow cooling range	ρ ($\Omega \cdot m$)	P _{cv} (kW/m ³)	P _{ev} (kW/m ³)
0.02	No slow cooling	0.039	3765	3347
0.02	1100~1000	0.052	2789	2259
0.02	1000~900	0.103	1752	1040
0.02	900~800	0.064	2587	2093
0.02	800~700	0.056	3194	2503
0.02	700~600	0.043	3055	2307

10/529333

FIG. 7

No.	SSA (m ² /g)	10%Ps (μm)	50%Ps (μm)	90%Ps (μm)	Bs (mT)	Density (g/cm ³)	Pcv (kW/m ³)	μi
18	2.44	0.73	1.82	23.62	498	4.92	1020	826
19	2.53	0.73	1.72	10.80	503	4.93	1077	833
20	2.66	0.72	1.52	6.02	509	4.95	1078	838
21	2.75	0.72	1.23	3.41	518	4.99	1008	848
22	3.01	0.64	1.04	2.04	523	5.02	1054	738
23	3.55	0.59	0.91	1.38	522	5.02	1054	725
24	4.15	0.59	0.85	1.19	522	5.01	990	799
25	5.27	0.52	0.72	0.95	520	5.01	1484	676

10/529333

FIG. 8

No.	Main constituents					Additives	SSA (m ² /g)	90%Ps (μm)	Bs (mT)	Density (g/cm ³)	Pcv (kW/m ³)	μi
	Fe ₂ O ₃ (mol%)	MnO (mol%)	ZnO (mol%)	NiO (mol%)	LiO _{0.5} (mol%)							
26	63	17	18	2	—	SiO ₂ :100ppm CaCO ₃ :1500ppm Nb ₂ O ₅ :200ppm * SiO ₂ /CaCO ₃ =0.07	3.19	1.35	494	5.05	661	1059
27	67	18.5	14	0.5	—		3.34	1.27	505	4.88	988	702
28	64	19	16	—	1		3.11	1.39	510	5.04	951	890
29	64	18	16	—	2		3.27	1.29	504	5.04	901	732
30	63	17.5	18	1	0.5		3.24	1.25	507	5.06	1167	803
31	64	16.5	18	0.5	2		3.41	1.26	504	5.04	1026	799
32	67	18	15	—	—		3.31	1.27	483	4.80	1013	658

10/529333

FIG. 9

No.	Partial pressure of oxygen (%) <at 900~1350°C>	B _s (mT)	Density (g/cm ³)	P _{cv} (kW/m ³)	B.Temp. (°C)	μ _i
33	0.0	517	4.96	1030	90	740
34	1.0	502	4.89	1021	90	807
35	3.0	494	4.88	1009	90	837
36	5.0	477	4.83	1012	90	840

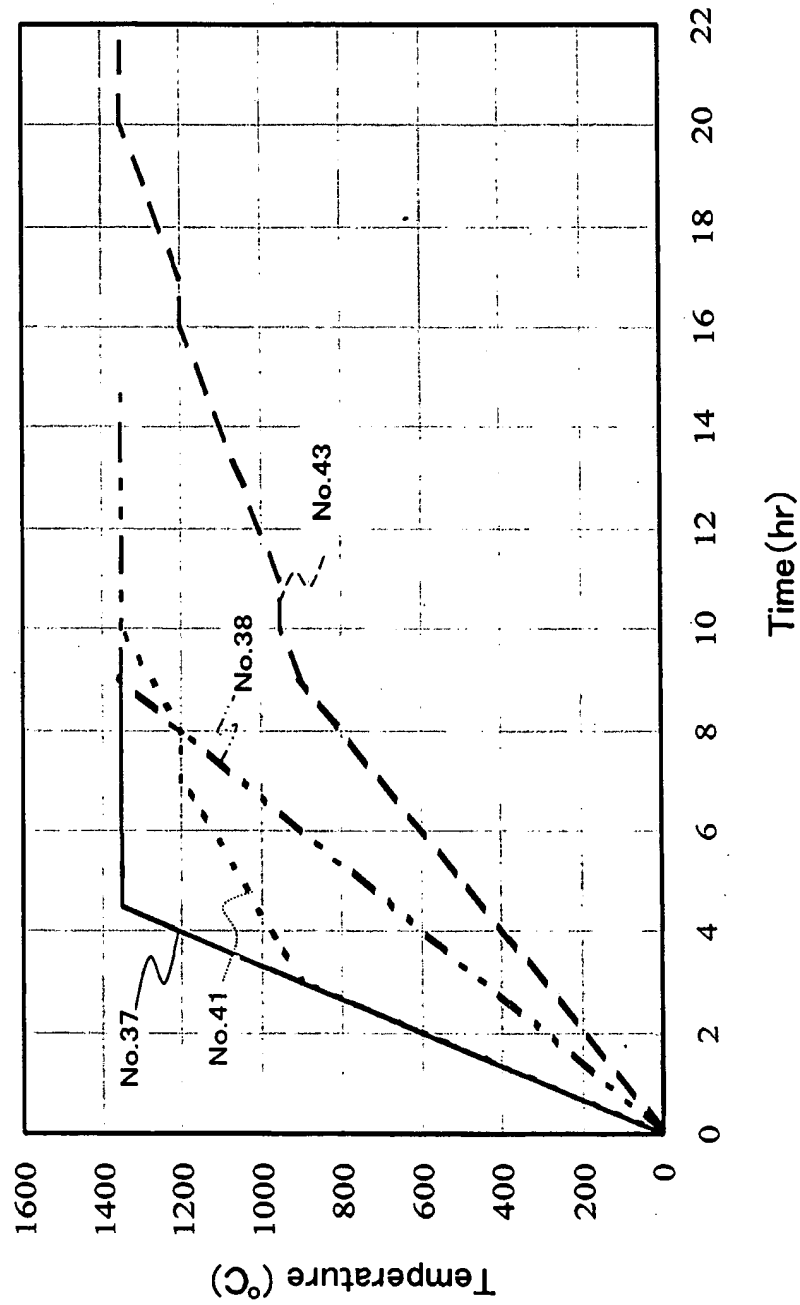
10/529333

FIG. 10

No.	Sintering conditions				Bs (mT)	Density (g/cm ³)	Change rate of μ i (%)		Change rate of Pcv (%)	
	Temperature increasing rate (°C/hr)	Constant temperature ranges		Retention temperature- retention time ≤ °C—hr>			Without surround	With surround	Without surround	With surround
		I	II							
37	300	---	---	1350°C—5hr	480	4.81	-14.2	-5.1	17.9	8.3
38	150	---	---		489	4.82	---	---	---	---
39	75	---	---		495	4.86	-17.5	-7	21	6
40	75	950°C : 1hr	---		506	4.92	---	---	---	---
41	75	1200°C : 0.5hr	---		506	4.95	-14.4	-4	19	7.3
42	75	1200°C : 1hr	---		510	4.97	---	---	---	---
43	50	950°C : 1hr	1200°C : 1hr		516	4.96	-16.2	-4.9	17	5.8

10/529333

FIG. 11



10/529333

FIG. 12

No.	Fe ₂ O ₃ (mol%)	MnO (mol%)	ZnO (mol%)	NiO (mol%)	LiO _{0.5} (mol%)	Bs (mT)	Pcv (kW/m ³)	B.Temp. (°C)	μ_i	Additives
45	63.0	17.0	18.0	2.0	—	494	661	100	1059	SiO ₂ :100ppm CaCO ₃ :1500ppm Nb ₂ O ₅ :200ppm Weight ratio of SiO ₂ content to CaCO ₃ content = 0.07
46	67.0	18.5	14.0	0.5	—	505	988	100	702	
47	64.0	19.0	16.0	—	1.0	510	951	100	890	
48	64.0	18.0	16.0	—	2.0	504	901	120	732	
49	63.0	17.5	18.0	1.0	0.5	507	1167	80	803	
50	64.0	16.5	18.0	0.5	2.0	504	1026	100	799	
51	67.0	18.0	15.0	—	—	483	1013	100	658	

10/529333

FIG. 13

No.	Atmosphere for temperature increasing process		Bs (mT)	Density (g/cm ³)	Pc (kW/m ³)	B.Temp. (°C)	μ i
	Atmospheric air	Partial pressure of oxygen: 0%					
52	~600°C	600°C~	518	4.97	1058	90	770
53	~900°C	900°C~	515	4.96	1027	90	796
54	~1100°C	1100°C~	498	4.87	1044	90	802

10/529333

FIG. 14

No.	Additives (ppm)				PO ₂ (%)	Bs (mT)	Pcv (kW/m ³)	ρ ($\Omega \cdot m$)	Change rate of Pcv	Other constituents
	SiO ₂	CaCO ₃	Total amount	Si/Ca						
55-1	100	2000	2100	0.050	0.02	502	3545	0.052	2.7	Fe ₂ O ₃ : 64.0mol% MnO: 17.5mol% ZnO: 16.5mol% NiO: 2.0mol% Nb ₂ O ₅ : 200ppm
55-2					1.0	493	1400	0.138	15.4	
56-1	100	2500	2600	0.040	0.02	503	2182	0.068	5.2	
56-2					1.0	499	1407	0.099	12.3	
57-1	150	1500	1650	0.100	0.02	504	2025	0.073	-0.8	
57-2					1.0	500	884	1.186	16.3	
58-1	150	2500	2650	0.060	0.02	505	1220	0.219	3.7	
58-2					1.0	494	870	0.879	14.2	
59	200	500	700	0.400	0.02	458	10389	0.063	2.3	
60	200	1000	1200	0.200	0.02	492	2132	0.078	4.7	
61	200	1500	1700	0.133	0.02	501	1250	0.200	5.4	
62	200	2000	2200	0.100	0.02	500	1180	0.334	3.9	
63	200	2500	2700	0.080	0.02	499	1163	0.422	3.4	
64	250	500	750	0.500	0.02	461	4251	0.048	3.8	
65	250	1500	1750	0.167	0.02	494	1234	0.360	6.7	

10/529333

FIG. 15

No.	Additives (ppm)			Bs (mT)	Pcv (kW/m ³)	ρ ($\Omega \cdot m$)	Change rate of Pcv	Correspondence	Other constituents
	SiO ₂	CaCO ₃	Total amount						
66	100	2500	2600	497	1502	0.125	5.2	56-1	Fe ₂ O ₃ : 64.0mol% MnO: 17.5mol% ZnO: 16.5mol% NiO: 2.0mol% Nb ₂ O ₅ : 200ppm
67	150	1500	1650	499	1345	0.214	5.9	57-1	
68	150	2500	2650	503	1234	0.139	3.1	58-1	
69	200	500	700	459	2856	0.072	4.1	59	
70	200	1000	1200	496	1281	0.299	3.3	60	
71	200	1500	1700	497	1124	0.766	4.6	61	
72	200	2000	2200	497	1112	1.090	4.8	62	
73	200	2500	2700	494	1251	0.163	4.8	63	Fe ₂ O ₃ : 64.0mol% MnO: 16.0mol% ZnO: 20.0mol% Nb ₂ O ₅ : 200ppm
74	250	500	750	463	1847	0.123	2.5	64	
75	250	1500	1750	502	1052	1.246	2.2	65	
76	150	2000	2150	482	1148	0.611	0.8	-	
77	150	2500	2650	487	1127	0.433	1.2	-	
78	200	2000	2200	486	998	1.326	4.5	-	
79	200	2500	2700	486	1035	0.314	3.6	-	

10/529333

FIG. 16

No.	Second additive	Additive	Additive amount (ppm)	Bs (mT)	P _{cv} (kW/m ³)	ρ ($\Omega \cdot m$)	Change rate of P _{cv}	Other constituents
80		ZrO ₂	100	500	1052	0.981	3.0	Fe ₂ O ₃ : 66.0mol%
81	Fourth additive	In terms of P (Ca ₃ (PO ₄) ₂)	20	511	1324	0.633	6.2	MnO: 18.5mol%
82		MoO ₃	100	518	1293	0.753	5.7	ZnO: 14.0mol%
83		MoO ₃	200	509	1221	0.679	4.4	NiO: 1.5mol%
84		V ₂ O ₅	200	509	1221	0.679	4.1	SiO ₂ : 200ppm
85		GeO ₂	100	507	1169	0.275	7.0	CaCO ₃ : 1500ppm
86		Sb ₂ O ₃	1000	512	1078	0.761	2.4	Nb ₂ O ₅ : 200ppm